

AMENDMENTS TO THE CLAIMS

What is claimed is:

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Claim 1 (currently amended): A process for preparing xylylenediamine ~~by comprising~~ continuously hydrogenating liquid phthalonitrile over a heterogeneous catalyst in
5 the presence of liquid ammonia in a reactor, in which a portion of the reactor effluent is recycled as a liquid circulation stream continuously to the reactor inlet (circulation mode), which comprises conducting a stream of a phthalonitrile melt in liquid form by means of a mixer unit into the circulation stream around the hydrogenation reactor, the phthalonitrile conversion in the reactor on single pass
10 being greater than 99%, and the circulation stream consisting to an extent of greater than 93% by weight of liquid ammonia and xylylenediamine and not comprising any further solvent for phthalonitrile.

Claim 2 (currently amended): The process according to claim 1 ~~for preparing meta-xylylenediamine~~ ~~by comprising~~ hydrogenating isophthalonitrile in order to prepare meta-xylylenediamine.

Claim 3 (currently amended): The process according to claim 1 ~~claims 1 or 2~~, wherein the mixer unit is heated at the point of the phthalonitrile supply into the circulation stream to a temperature in the range from 1 to 40°C above the melting point of
20 the phthalonitrile used.

Claim 4 (currently amended): The process according to claim 1 ~~any of the preceding claims~~, wherein the liquid phthalonitrile is sprayed into the circulation stream by means of a mixer nozzle as the mixer unit.

Claim 5 (currently amended): The process according to claim 1 ~~any of the preceding claims~~, wherein the phthalonitrile conversion in the hydrogenation reactor on single pass is greater than 99.5%.

30 Claim 6 (currently amended): The process according to claim 1 ~~any of claims 1 to 4~~, wherein the phthalonitrile conversion in the hydrogenation reactor on single pass is greater than 99.9%.

35 Claim 7 (currently amended): The process according to claim 1 ~~any of the preceding claims~~, wherein the circulation stream consists to an extent of greater than 94% by weight of liquid ammonia and xylylenediamine.

40 Claim 8 (currently amended): The process according to claim 1 ~~any of the preceding claims~~, wherein the circulation stream contains in the range from 25 to 90% by weight of liquid ammonia.

5 Claim 9 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the portion of the liquid reactor effluent which is recycled as the
circulation stream continuously to the reactor inlet makes up from 20 to 95% by
weight of the overall liquid reactor effluent.

10 Claim 10 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the weight ratio of phthalonitrile feed stream to circulation stream
is in the range from 0.03 to 1.0.

15 Claim 11 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the hydrogenation is carried out at a temperature in the range
from 40 to 150°C.

20 Claim 12 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the hydrogenation is carried out at an absolute pressure in the
range from 100 to 300 bar.

25 Claim 13 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the hydrogenation is carried out over a catalyst comprising Ni, Co
and/or Fe, as an unsupported catalyst or on an inert support.

30 Claim 14 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the hydrogenation is carried out over a manganese-doped
unsupported cobalt catalyst.

35 Claim 15 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the catalyst is disposed as a fixed bed in a tubular reactor or tube
bundle reactor.

40 Claim 16 (currently amended): The process according to claim 1 the preceding claim,
wherein the reactor is operated in trickle mode.

35 Claim 17 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the reactor is operated adiabatically.

45 Claim 18 (currently amended): The process according to claim 1 any of the preceding
claims, wherein heat is withdrawn from the circulation stream in a cooler.

50 Claim 19 (currently amended): The process according to claim 1 any of the preceding
claims, wherein the xylylenediamine is purified after the hydrogenation by

distilling off the ammonia and also any relatively low-boiling by-products overhead and distillatively removing relatively high-boiling impurities via the bottom.

5 Claim 20 (currently amended): The process according to claim 19 the preceding claim, wherein the xyllylenediamine is extracted after the distillation with an organic solvent for further purification.

10 Claim 21 (currently amended): The process according to claim 20 the preceding claim, wherein cyclohexane or methylcyclohexane are used for the extraction.